

Fast Facts about the Midwater and Bioluminescence!!

- If you averaged the temperature, depth, and light level of all the world's oceans, you would have a temperature of 4°C, an average depth of 4267 meters, and an average light level of zero!
- The midwater (mesopelagic), also known as the “twilight zone”, is from about 200 to 1000 meters below the ocean's surface (this depends on where in the world you are, though). This is the zone below the photic (epipelagic) zone.
- In the midwater, organisms have to deal with low temperatures, high pressure, and very little (or no) light.
- Animals adapted for midwater regions can have large, well-developed eyes, countershaded bodies, large mouths, red or black coloration or transparent bodies, and/or bioluminescence.
- One interesting adaptation of the male anglerfish is that once he finds a female, he bites onto the back of her, and becomes attached permanently! He becomes a parasite, relying on the female for nutrition and his purpose is to produce sperm when the female is ready to reproduce; this solves the problem of finding a mate at the right time in such a challenging environment!
- Bioluminescence can be used by organisms for attracting a mate, finding food, or protecting themselves by using it to distract or blind a predator, or counterilluminate their body to blend in with their environment (same idea as countershading).
- Bioluminescence (visible light made by living organisms) is created through a highly efficient chemical reaction involving luciferin (a substrate) and luciferase (an enzyme).
- Bioluminescence is different from phosphorescence (a delayed emission of light from a source that has been excited by light – like glow-in-the-dark toys), fluorescence (like phosphorescence, but emission of waves at a higher energy, i.e. shorter wavelength, and emission ceases when the light source does), and iridescence (play of colors producing rainbow effects, as in soap bubbles).
- Most bioluminescent organisms are marine (e.g. bacteria, ctenophores, squids, shrimps, fishes), but there are a few terrestrial (e.g. fungi, snails, earthworms, insects) and freshwater organisms (e.g. limpets) that are bioluminescent as well.